**Abstract of the Disclosure**

An apparatus and associated method for measuring vibration in an article having a rotating member. The device comprises a motion sensitive transducer attachable to the article comprising an output producing a time domain analog signal in response to the vibration. An analog-to-digital data acquisition member comprises an input connected to the transducer output for sampling the transducer signal and comprising an output producing a time domain digital signal from the sampling. A timing sensor is adapted to detect an instantaneous speed of the rotating member and triggers the data acquisition member to begin sampling when the rotating member is rotating. A processor comprises an input connected to the data acquisition member output for translating the time domain digital signal to a frequency domain digital signal and determining the magnitude and phase of the vibration signal at a frequency associated with the instantaneous speed of the rotating member.